

WO 01/06251

PCT/LB00/00966

CLAIMS

1. A screening-type process for the quantitative determination of cocaine and other alkaloids which are present in a solid sample which includes the steps of:
- providing a solid sample in a finely divided or powdered form;
 - completely immersing the sample into a liquid reagent providing a constant concentration of hydroxyl groups;
 - maintaining the sample immersed in the liquid at a temperature in a range from 10 to 250°C for a period of time in a range from a few seconds to 48 hours; and
 - analyzing the liquid separated from the solid with a conventional kit for the determination of the said substances in urine.
2. Process according to claim 1, wherein the solid sample is a sample of hair.
3. Process according to claims 1 and 2, wherein said range of temperature is from 100 to 150°C.
4. Process according to claims 1 and 2, wherein said range of period of time is from 15 minutes to 24 hours.
5. Process according to any preceding claims, wherein said temperature is maintained at 100°C for 1 hour.
6. Process according to any of the preceding claims, wherein the concentration of hydroxyl groups is in the range of from 0.0001 to 5 M;
7. Process according to any of the preceding claims, wherein the concentration of hydroxyl groups is in the range of 0.03 to 0.5 M.

WO 01/06251

PCT/IB00/00966

8. Process according to any preceding claims, wherein the concentration of hydroxyl groups is in the range of 0.04 to 0.33 M.
9. Process according to any of the preceding claims, wherein the liquid reagent is ammonia buffer.
10. Process according to claim 7, wherein the buffer is 0.2 M $(\text{NH}_4)_2\text{HPO}_4$ with the addition of 5 ml of 25% NH_4OH to each liter thereof.
11. Process according to any preceding claims, which further comprises the steps of:
- arranging the analyzed samples in the increasing order of concentration of drugs; and
 - performing confirmation analyses with standard techniques of the samples taken in the said order.
12. Screening-type process for the quantitative determination of cocaine and other alkaloids which are present in a solid sample, comprising the following steps:
- providing a sample made of about 50 to 300 mg of finely divided and/or powdered material;
 - adding in the test tube containing the said sample a suitable liquid reagent until the sample is completely immersed, said reagent being capable of performing extraction and transformation of cocaine into benzoylecgonine and at the same time of extracting other similar substances which are present in the sample
 - if necessary, agitating the test tube to facilitate immersion of the sample;
 - heating the contents of the test tube to a temperature T_1 for a time interval t_1 by keeping the test tube immersed in a thermostated bath or by

WO 01/06251

PCT/TB00/00966

placing it in an oven;

- cooling the test tube to room temperature;
- taking the liquid and transferring it into a test tube suitable for a screening type instrument;
- 5 - performing the screening by using a kit of reagents for the determination of the said substances in urine;
- reading the data resulting from the first level instrumentation to verify the concentration values with respect to the cut-off limit; and
- contemporaneously determining the amount(s) of substance(s) present.

10

13. Reagent for use in the process of claims 1, 9 or 10, which is a liquid that provides a constant concentration of hydroxyl groups in the range of from 0.04 to 0.33 M.

15 14. Reagent according to claim 12, which is 0.2 M $(\text{NH}_4)_2\text{HPO}_4$ with the addition of 5 ml of 25% NH_4OH for each liter thereof.

15 15. Reagent according to claim 11 or 12, wherein said solution comprises a solute selected among aluminum hydroxide, barium hydroxide
20 octahydrate, benzyltriethylammonium hydroxide, benzyltrimethylammonium hydroxide, calcium hydroxide, phenylhydrargirium hydroxide, lithium hydroxide, lithium hydroxide monohydrate, magnesium hydroxide, potassium hydroxide, potassium hydroxyantimoniate, sodium hydroxide, sodium hydroxide monohydrate, strontium hydroxyde octahydrate,
25 tetramethylammonium hydroxide, tetrapropylammonium hydroxide, trimethylvinylammonium hydroxide, tetrapropylammonium hydroxide, trimethylvinylammonium hydroxide, dissolved in a solvent selected among ethanol, methanol, water, monobasic ammonium phosphate, ammonium acetate, ammonium benzoate, ammonium bicarbonate, ammonium
30 bichromate, ammonium bisulphate, ammonium bromide, ammonium

WO 01/06251

PCT/IB00/00966

carbamate, ammonium carbonate, ammonium citrate bibasic, ammonium
chromate, ammonium iodide, molybdate, ammonium monovanadate,
ammonium nitrate, ammonium oxalate monohydrate, ammonium
persulphate, ammonium sulphate, ammonium sulphamate, ammonium
5 sulphite, ammonium sulphide, ammonium tartrate, ammonium thiocyanate,
ammonium thioglycolate, ammonium thiosulphate, ammonium chloride,
sodium phosphate monobasic, sodium phosphate bibasic, potassium
phosphate monobasic, potassium phosphate bibasic.

10 16. Use of the reagent according to claims 12 to 15 for the carrying out of
the process of any of claims 1 to 10 and 11.

17. Diagnostic kit including the reagent of claim 12 as one of its
components.